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Increasing prevalence of overweight among Seychelles children, 1998-2002

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Abstract

To examine the prevalence and trends in excess weight among children in the Seychelles. Serial surveys of weight and height were conducted each year between 1998-2002 in all students attending four school grades (crèche, 4th, 7th and 10th years of compulsory school). Overweight and obesity were defined using age-specific body mass index (BMI) criteria of the International Obesity Task Force. Two questions explored physical activity at leisure time and daily walking time. From an eligible total of 32 077 observations between 1998-2002, data were available in 22 694 (71%), which corresponded to 17 627 separate children. Median age in the four grades was respectively 5.5, 9.2, 12.6, and 15.8 years. The overall prevalence of excess weight ('overweight' and 'obese' categories combined) was 10.5% in boys and 16.4% in girls. From 1998 to 2002, the prevalence of excess weight increased from 8.4% to 11.8% in boys and from 11.9% to 18.4% in girls. The increase of excess weight over calendar years was particularly marked among the younger children. Only a quarter of children reported walking at least 30 minutes per day. Leisure physical activity was inversely associated with excess body weight. The prevalence of excess body weight was high among school children of Seychelles and increased substantially over a five-year period. This calls for prompt and energetic policies and programs to promote physical activity and healthy nutrition among children.

Key words overweight, obesity, weight trends, physical activity, school children, Seychelles

Introduction

The prevalence of overweight has increased greatly in developed countries over the last two to three decades in adults, children and infants (1-2). Although few data are available in developing countries, the epidemic of obesity is also occurring in these countries (3-4), often in addition to an ongoing problem of under nutrition in some segments of these populations.

The epidemic of overweight is a major public health problem as overweight is a strong risk factor for diabetes, hypertension, blood lipid disorders, cardiovascular disease (CVD), certain cancers and other non-communicable diseases (NCD) (5-8). In the US alone, it was estimated that excess weight and physical inactivity accounted for 300,000 premature deaths per year and for 9.4% of all direct health care costs ($70 billion attributable to obesity and $24 billion to inactivity) (9). At a global level, the World Health Organization has put the fight against overweight among its top priorities and its much-awaited anti-obesity plan (10) was presented to Member States at the World Health Assembly in May 2004.

The epidemic of obesity among children is particularly worrying because overweight tracks into adulthood (11), is associated with adverse health outcomes both during childhood and adulthood (10), and is difficult to treat. Overweight related diseases such as type-2 diabetes and gall bladder stones, once limited to middle-aged and older adults, are now occurring increasingly often among adolescents and longer term complications such as heart attack are expected to occur at an earlier age in the current cohorts of children. Additionally, obesity is associated with a number of psychosocial disorders and the quality of life of obese children and adolescents may be similar, for example, to that of children with cancer (12).

Overweight has become a major health problem facing adults as well as youth with accumulating evidence suggesting that the problem is further worsening. This paper presents results of a national surveillance program of body weight among school children in the Seychelles.

Methods

Eligible subjects in this study were all children living in Seychelles of four selected school grades – crèche or kindergarten (G0), 4th (G4), 7th (G7) and 10th (G10) years of compulsory school from 1998 to 2002. All students in these grades attend a health visit as part of a routine school health program conducted at school by 17 school nurses. Medical data are not routinely collected for children of other grades. Nearly 100% of children attend compulsory school with approximately 96% attending public schools and 4% private

schools. The particulars and date of birth of all eligible students came from an electronic database maintained by the national civil status office, which is further updated for school-related variables by the Ministry of Education. Participation of students in the screening program is conditional to a signed agreement by their parents. In addition, students who do not wish to participate are not forced to do so.

From 1998 onwards, weight and height were measured with precision electronic scales (Seca 870, Seca, Hamburg, Germany) and fixed stadiometers (Seca 208). Children were measured without shoes and in light garments (all children wear light uniforms, in view of the tropical temperature throughout the year). Stadiometers were fixed to the wall in one room of all schools, ensuring consistency in height readings. School nurses were regularly trained on the measurement techniques. Scales were checked for accuracy several times during the five-year period. As part of the routine surveillance system, children of grades 4, 7 and 10 were also asked about a few lifestyle habits, including daily walking time to and from school (expressed in minutes per day) and frequency of leisure exercise outside of school (< once/month; at least once per month but less than once per week; once per week; twice per week; three times or more per week).

Body mass index (BMI) was calculated as weight divided by height squared (kg/m^2). Overweight and obesity were defined using the sex- and age-specific BMI criteria of the International Obesity Task Force (13). These sex- and age-specific criteria for children are different from criteria used for adults. In this paper, "excess weight" designates the category of overweight and obesity combined, i.e. any weight that is abnormally high. Prevalence and 95% confidence intervals were calculated for each sex, grade and survey year category. The association between excess weight (which is inherently adjusted for sex and age), calendar years and indicators of physical activity was examined using logistic regression. Logistic regression coefficients were corrected for clustering on children's national identity number (a unique number assigned to every baby at registration of birth) to account for the fact that some children were seen twice. All analyses (i.e. prevalence estimates and logistic regression coefficients) were weighted to the frequency of observations in each category to account for incomplete sampling in some grade-, sex- and year-categories. Statistical analyses were performed with Stata 7.0. All p values less than 0.05 were considered significant.

Results

From an eligible total of 32 077 observations in 1998-2002, weight and height data were available for 22 694 children (Table 1), an overall participation of 71%. The 22 694 observations included 16 633 children seen once, 4483 children seen twice and 1578 children for which a unique identifier (national identity number) was not available.

Assuming that the same proportion of children was seen twice among the 1578 children for whom a unique identifier was not available as among children for whom a unique identifier was available, the 22 694 observations correspond to 17 627 individual children. The number of children seen twice increased from 0% at G0 to 37% at G4 and from 0% in 1998 to 63% in 2002.

Table 1 Participants by sex, school grade and calendar year

	Year					
	1998	**1999**	**2000**	**2001**	**2002**	**All**
Boys						
G0	382	652	447	592	603	2676
G4	347	687	559	742	610	2945
G7	409	677	367	740	768	2961
G10	447	671	424	639	572	2753
Total	1585	2687	1797	2713	2553	11 335
Girls						
G0	342	652	427	536	556	2513
G4	314	729	558	728	599	2928
G7	398	728	348	728	768	2970
G10	385	700	517	683	663	2948
Total	1439	2809	1850	2675	2586	11 359
Grand total	**3024**	**5496**	**3647**	**5388**	**5139**	**22 694**

G0: 2nd year crèche; G4: 4th year primary; G7: 1st year secondary; G10: 4th year secondary

Table 2 shows the mean (± standard deviation) for age, weight, height, and BMI by sex and school grade based on all observations in 1998-2002. At G0 and G4, height, weight and BMI were similar between boys and girls. At G7, girls were taller and had higher weight and BMI than boys ($p < 0.001$). At G10, boys were taller and heavier than girls but girls had a higher BMI than boys ($p < 0.001$)

Table 3 shows quantile regression coefficients of centiles of height, weight and BMI over calendar years. Quantile regression coefficients represent the estimated increase in the value of the considered percentiles per each calendar year. For example, the 15th percentile of height increased by 0.17 cm

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Table 2 Mean values (and SD) of age, weight, height and body mass index by sex and school grade, 1998-2002

		Age		Weight		Height		BMI	
Grade	**N**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Boys									
G0	2,676	5.5	0.4	19.4	3.6	113.1	6.2	15.1	2.1
G4	2,945	9.2	0.5	29.3	7.0	133.8	6.8	16.2	2.9
G7	2,961	12.6	0.4	41.8	10.5	151.6	8.4	18.0	3.6
G10	2,753	15.8	0.4	57.6	11.0	169.7	7.7	20.0	3.3
Girls									
G0	2,513	5.5	0.4	19.0	3.4	112.3	6.6	15.0	2.2
G4	2,928	9.2	0.5	30.0	7.8	133.9	7.1	16.6	3.3
G7	2,970	12.5	0.4	45.5	11.1	153.7	7.2	19.2	4.0
G10	2,948	15.8	0.4	54.8	11.8	160.2	6.4	21.3	4.3

Table 3 Quantile regression of centiles of height, weight and body mass index over calendar years by sex and school grade

		Boys						Girls					
		Height		Weight		BMI		Height		Weight		BMI	
Grade	Centile	QRC	*P*	QRC	*P*	QRC	*P*	QRC	*P*	QRC	*P*	QRC	*P*
G0	P15	0.10		0.00		0.01		0.15		0.04		0.03	
	P50	0.03		0.04		0.02		0.04		0.07		0.02	
	P85	0.02		0.13		0.09	*	-0.19		0.07		0.09	
	P95	0.07		0.31		0.25		-0.41		0.32		0.13	
G4	P15	-0.05		0.04		0.04		0.18		-0.01		-0.03	
	P50	0.11		0.11		0.07		0.22		0.13		0.05	
	P85	0.19		0.72	*	0.32	*	0.34		0.85	*	0.19	
	P95	0.22		1.70	*	0.76	*	0.24		1.58	*	0.71	*
G7	P15	0.43	*	0.20		-0.01		0.4	*	0.30		0.07	
	P50	0.32	*	0.51	*	0.12	*	0.08		0.60	*	0.17	*
	P85	0.45	*	0.64	*	0.27	*	0.24		0.96	*	0.33	*
	P95	0.64	*	1.00		0.23		0.15		0.78		0.19	
G10	P15	0.37	*	0.28		-0.02		0.18		0.00		-0.02	
	P50	0.25		0.08		-0.03		0.21		0.50	*	0.12	
	P85	0.01		0.27		-0.04		0.31		0.63		0.10	
	P95	0.05		0.42		0.19		0.41	*	0.15		0.05	
All	P15	0.17	*	0.03		0.00		0.39	*	0.12		0.03	
	P50	0.25	*	0.08		0.03		0.38	*	0.37	*	0.10	*
	P85	0.23	*	0.35	*	0.16	*	0.25	*	0.60	*	0.20	*
	P95	0.35	*	0.65	*	0.44	*	0.29	*	0.64	*	0.29	*

QRC: quantile regression coefficients, adjusted to children's age and weighted for frequency of samples.
* p<value of less than 0.05

per calendar year when considering all boys between 1998-2002. It must be emphasized that the serial survey design of our study allows examination of the 'period effect' on subsequent cohorts of children rather than a 'cohort effect' that would apply to the same children examined repeatedly over time. The increase in height over calendar years was consistent irrespective of sex and grade (i.e. it is apparent in all children).

Overall, the regression coefficients for the increase in height were 0.17-0.39 cm per calendar year, or, in other words, height among all children increased by approximately 1 cm every 5 years. For weight, an increase over calendar years occurred mostly in the categories of children in the highest weight categories (i.e. not among the leanest children) and among children in the intermediate age categories. For example, the weight increased by 0.6-1 kg per calendar year in children of G7 (aged 13) in the highest weight categories (P85 and P95). Similarly, the magnitude of the regression coefficients (i.e. change of BMI per calendar year) was markedly larger in the upper tail of the BMI distribution (e.g. P85 and P95) than in the lower tail (i.e. the largest got larger while the leanest remained lean). The increase of BMI centiles over time was greater in the low and intermediate grades (G0, G4, G7) than in the highest one (G10).

Table 4 shows the prevalence of excess weight and obesity by sex, grade, and calendar year. Overall (1998-2002), the prevalence of excess weight and obesity was higher in girls than in boys (respectively 16.4% vs. 10.5% and 4.9% vs. 3.5%, p <0.001). The prevalence of excess weight and obesity increased over the five-year period for both boys and girls. The trends were substantial in all grades except for boys at G10. Figure 1 is a graphical representation of the overall results.

Table 5 shows the proportions of children at G7 and G10 reporting physical activity by sex, school grade and calendar years. The proportion of boys and girls walking at least 30 minutes per day was fairly low (overall proportions of respectively 25.0% and 27.3% in boys and girls of G7 and G10 in all years). Fewer girls than boys reported leisure physical activity outside of school at least twice weekly and this sex difference was larger at G10 than at G7 (respectively 48% vs. 79% at G10 and 58% vs. 77% at G7). The proportions of children reporting leisure exercise at least twice weekly decreased over calendar years for girls but not for boys. Analyses based on other cut-off values (including average walking time) showed similar trends over calendar years.

Logistic regression (Table 6) shows that the odds for a child to have excess weight (i.e. with either overweight or obesity) increased, for each calendar year, by 12% in boys and 9% in girls. The variables included in the regression analyses are those mentioned in the table (all variables are categorical) and it should be noted that excess weight is corrected for age and sex. The odds for a child to be obese increased by a slightly larger extent (respectively 14% and 11% in boys and girls) than the odds for excess weight. In a model including dichotomous indicators of physical activity, limited to children of G4 to G10 (these indicators have less relevance in crèche children and were not measured), regular physical activity was inversely associated with overweight. In a separate model with the same variables except for walking time as a continuous variable, walking time was not associated with being overweight.

Table 4 Prevalence (percent and 95% confidence interval) of overweight and obesity by sex, grade and calendar year

	Boys						Girls					
	1998	1999	2000	2001	2002	Total	1998	1999	2000	2001	2002	Total
Excess weight (overweight plus obesity)												
G0	3.9	8.6	8.7	7.8	10.8	8.3	7.3	12.1	10.1	11.6	13.8	11.4
	2.0-5.9	6.4-10.7	6.1-11.4	5.6-10.0	8.3-13.3	7.2-9.3	4.5-10.1	9.6-14.6	7.2-12.9	8.8-14.3	11.0-16.7	10.1-12.6
G4	7.8	8.9	11.3	14.2	11.8	11.1	14.6	15.4	17.4	17.2	18.4	16.7
	5.0-10.6	6.7-11.0	8.6-13.9	11.6-16.7	9.2-14.4	10.0-12.3	10.7-18.6	12.7-18.0	14.2-20.5	14.4-19.9	15.2-21.5	15.4-18.1
G7	9.3	10.9	13.9	11.9	14.5	12.2	11.1	18.1	19.5	17.6	21.9	18.2
	6.5-12.1	8.6-13.2	10.3-17.5	9.6-14.2	12.0-16.9	11.1-13.4	8.0-14.2	15.3-20.9	15.4-23.7	14.8-20.4	19.0-24.8	16.8-19.6
G10	11.9	7.5	10.4	9.2	9.1	9.4	14.5	17.4	18.4	16.1	18.1	17.1
	8.9-14.9	5.5-9.4	7.4-13.3	7.9-11.5	6.7-11.5	8.3-10.5	11.0-18.1	14.6-20.3	15.0-21.7	13.3-18.9	15.2-21.0	15.7-18.4
Total	8.4	9.0	11.0	11.0	11.8	10.3	11.9	15.8	16.4	15.9	18.4	16.0
	7.0-9.7	7.9-10.0	9.5-12.4	9.8-12.2	10.5-13.0	9.8-10.9	10.2-13.6	14.5-17.2	14.7-18.1	14.5-17.3	16.9-20.0	15.3-16.7
Obesity												
G0	1.3	3.4	2.9	3.2	4.6	3.3	3.2	4.0	2.1	3.9	5.6	3.9
	0.2-2.5	2.0-4.8	1.3-4.5	1.8-4.6	3.0-6.3	2.6-3.9	1.3-5.1	2.5-5.5	0.7-3.5	2.3-5.6	3.7-7.5	3.1-4.7
G4	2.3	3.2	3.0	5.0	5.2	3.9	1.9	4.3	4.5	7.1	5.7	5.1
	0.8-3.9	1.8-4.5	1.6-4.5	3.4-6.6	3.5-7.0	3.2-4.6	0.4-3.4	2.8-5.7	2.8-6.2	5.3-9.0	3.8-7.5	4.3-5.8
G7	2.2	3.5	5.2	3.9	3.8	3.7	3.0	4.9	3.7	4.8	5.3	4.6
	0.8-3.6	2.2-4.9	2.9-7.5	2.5-5.3	2.4-5.1	3.0-4.4	1.3-4.7	3.4-6.5	1.7-5.7	3.3-6.4	3.8-6.9	3.9-5.4
G10	2.0	2.7	3.1	3.0	3.1	2.8	4.4	5.3	6.2	4.2	6.2	5.3
	0.7-3.3	1.5-3.9	1.4-4.7	1.7-4.3	1.7-4.6	2.1-3.4	2.4-6.5	3.6-7.0	4.1-8.3	2.7-5.8	4.4-8.0	4.5-6.1
Total	2.0	3.2	3.5	3.8	4.2	3.4	3.2	4.6	4.3	5.1	5.7	4.7
	1-3-2.6	2.5-3.9	2.6-4.3	3.1-4.6	3.4-5.0	3.1-3.8	2.3-4.1	3.9-5.4	3.3-5.2	4.2-6.0	4.8-6.6	4.3-5.1

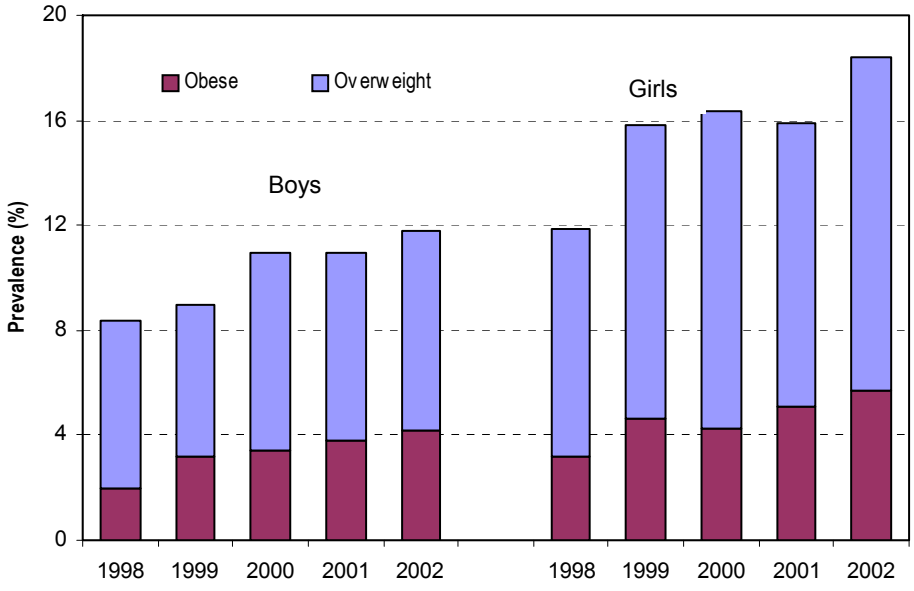

Figure 1 Prevalence of overweight and obesity by sex and calendar years

Table 5 Proportion of children reporting selected physical activity, by sex, grade and calendar years

	Boys						Girls					
	1998	1999	2000	2001	2002	p	1998	1999	2000	2001	2002	p
Walking at least 30 minutes per day												
G7	26.7	32.8	32.8	28.6	24.9	0.050	28.5	35.6	32.4	33.1	24.5	0.011
G10	23.1	25.7	22.5	26.5	17.0	0.048	32.0	28.4	25.4	28.8	22.3	0.000
Physical activity outside school at least twice a week												
G7	85.7	69.1	80.4	85.4	73.0	NS	68.7	55.2	67.3	61.2	52.3	0.000
G10	85.2	77.2	68.8	81.2	77.9	NS	57.3	50.5	46.1	51.7	37.4	0.000

NS=Not significant

Table 6 Relationship between overweight, calendar years and physical activity

	Odds Ratio for excess weight (confidence intervals)		Odds Ratio for obesity (confidence intervals)	
	All	G4, G7, G10	All	G4, G7, G10
Boys (N)	10 511	7154	10 511	7154
Calendar year	1.12	1.13	1.14	1.19
	(1.08-1.17)	(1.07-1.19)	(1.06-1.22)	(1.09-1.30)
Walking >30 min per day (vs. less)		0.98		0.99
		(0.82-1.17)		(0.73-1.33)
Leisure exercise at least twice weekly (vs. less)		0.75		0.77
		(0.63-0.88)		(0.57-1.01)
Girls (N)	10 605	7358	10 605	7358
Calendar year	1.09	1.07	1.11	1.09
	(1.05-1.13)	(1.03-1.11)	(1.05-1.18)	(1.02-1.17)
Walking >30 min per day (vs. less)		1.02		1.07
		(0.89-1.17)		(0.85-1.36)
Leisure exercise at least twice weekly (vs. less)		0.88		0.97

Because the definition of overweight in children is age- and sex-specific, the models are also inherently adjusted for age and sex

Discussion

This study provides direct evidence of a rapid increase in excess body weight in both boys and girls in Seychelles. The prevalence of excess weight among children increased by approximately 10% per calendar year or by as much as approximately 50% during the last five years.

Overall, the prevalence of overweight in children in Seychelles is as high or higher than in many developed and developing countries. Using the same definition of overweight/obesity, the prevalence of overweight and/or obesity is higher in Seychelles than in Netherlands, UK, Brazil or Singapore but slightly lower than in the U.S. (13). (While data in Seychelles are recent, data in the aforementioned countries were gathered a few years ago and may be underestimates of the current situation).

The increase in overweight and obesity prevalence over calendar years appeared to be less marked among the oldest students, particularly boys (G10; mean age of 16) than the younger ones (G0, G4, G7: age 6-13).

This may relate to various factors. First, several school nurses have reported that some obese adolescents tended to avoid participation in the school health screening, perhaps for fear of being stigmatised. Also, avoidance of screening by obese adolescents might increase over time as adolescents are gaining more autonomy in their decisions at school (e.g. whether to participate in health screening) and in view of the increasing societal perception that overweight is undesirable. These circumstances would lead to a systematic underestimation of excess weight in adolescents (when assessed through voluntary screening) and possibly further distortion over time (differential bias). Alternatively, the lower rate of increase of overweight over time among adolescents than younger children could indicate that adolescents pay increasingly more attention to maintenance of a lean body weight (over calendar years) as social norms of leanness are increasingly promoted in the mass media and through health programs.

Although the trend in increasing prevalence of excess weight was less impressive among older than younger children in our study, the overall finding is that the prevalence of overweight is increasing rapidly among children in Seychelles. This finding is consistent with the fairly low proportions of children reporting regular leisure physical activity, the fairly low average daily walking time, and the trends for these indicators (at least for girls) to further decrease over the five-year study period considered in this study. It is a common observation that boys (including adolescents) are often engaged in some sort of sport in Seychelles, but it remains to be seen if the lesser degree of decrease of leisure activity among male adolescents will be sustained in the future. The pressure for a sedentary lifestyle is high with increasing private and public transport in the country, increased academic pressure at school, ownership by virtually all households of leisure electronic devices (video, DVD), and limited resources to increase the number and quality of facilities for physical exercise in schools and in the community in face of economic constraints. In our study, regular physical activity was inversely associated with overweight.

There are several limitations to the study. Participation varied over the years (although analysis accounted for uneven sampling over calendar years). Also, it may be that that some categories of obese students participated differently from non-obese students in the study, which could have led to bias (as discussed above). Finally, data collection over several years within the context of a surveillance system involves large numbers of participants (students) and officers (school nurses) and this may incur some errors in measurement, despite efforts to train observers and standardise measurements. Such non-systematic error could typically result in some imprecision (increased confidence intervals) but would not be expected to alter the values of the point estimates (hence no bias). The study also has several strengths. Participation was high and the population considered included the entire population in the age groups being studied. Measurements were made with the same measurement material throughout the five-year period. Although it is not relevant for this paper, it is worth mentioning that data gathered every year in our ongoing national surveillance system will allow analysis in a few more years of changes in weight over time at individual level (cohort analysis), as the same students are seen repeatedly every three to four years from crèche to the last year of secondary school.

Experts generally agree that the acceleration of excess weight gain in recent years in children (observed in many countries) is owing to an increasing imbalance between (decreased) energy expenditure / physical activity and

(increased) energy intake. In Seychelles, as elsewhere, physiology and the genetic pool cannot have changed sufficiently rapidly to explain these rapid trends. In particular, Seychelles has not experienced significant immigration or emigration during the study period. Therefore the causes of the rapidly increasing prevalence of obesity in Seychelles children, as elsewhere, are likely to be sought mainly in the environment. As described by the environmental model of obesity proposed by the IOTF (14), national barriers are increasingly permeable to globalisation, and under such pressure, the so-called "toxic environment" for obesity (15) appears to have also spread to countries as geographically isolated as the Seychelles. A general explanation, seemingly, lies in humankind's hunter-gatherer inheritance in an environment that has been scarce in foods for millennia which leaves us ill equipped to deal with today's abundant diet and sedentary lifestyle (16).

A number of factors have been identified in the literature, which may not all necessarily apply to the Seychelles context (17,18). For example, at an individual level, factors include the amount of time spent watching TV/video; the fact that meals are not eaten together as a family; and too much control by parents of the food intake of children. At an environmental level, factors include insufficient amount of physical exercise at school; excessively large portions of energy-dense foods (sugar and fats); advertising for unhealthy energy-dense foods; limited availability of fruits and vegetables in school canteens (or at home); inadequate (in terms of both quantity and quality) educational programs on overweight at school and in the mass media; and some cultural factors (e.g. the perception that overweight signals a successful career, particularly in some developing countries). For infants and young children, excess weight has been associated with early cessation of exclusive breastfeeding; use of added sugars and starches when feeding formula; lack of recognition by mothers of a child's ability to regulate its energy intake, and pressuring children to eat until the plate is empty. In a previous analysis of our data in Seychelles (limited to 5514 children seen in 1999), we found a strong association between weight gain during the first year of life and subsequent obesity in childhood (19).

The findings of a rapidly escalating epidemic of overweight and obesity in Seychelles calls for prompt and energetic policies and programs to limit sedentary behaviours and promote physical activity and healthy nutrition among children (and adults). Several authoritative bodies have formulated preventive measures recently, e.g. the American Academy of Pediatrics (20), the American Heart Association (21), and the World Health Organization (12,16). Common to these documents is the recognition that interventions to address the obesity epidemic must be applied not only to the body but also (and perhaps especially) to the body politic to shape environments that better enable individuals to eat healthier food and exercise more. Urban design policies are needed to promote open and safe spaces, sidewalks, bike paths, and parks that promote physical activity. Schools can play a critical role by eliminating soft drinks and foods of low nutrient density from vending machines or in-school shops and ensuring that school meals are nutritious. Regulations should require that all foods be properly labelled with respect to their content to allow consumers to make informed choices on the foods they buy. Differential taxation and subsidy are potentially powerful means for promoting healthier manufactured food and drinks and deterring from consumption of unhealthy ones. Fiscal and other measures can also be taken to promote responsible marketing practices by the food industry.

More generally, advocacy at all levels is needed to speed action. Policy makers must be warned of the serious consequences that may occur if current trends in weight gain continue among youth. Without prompt and effective action, children may have, in the near future, shorter life expectancies than their parents and could be more harmed by food and lack of physical exercise than by tobacco, alcohol, and drug abuse combined (22-24).

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Education in Seychelles: an overview

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Abstract

The paper gives a brief description of the Seychelles education system, its main characteristics and its major achievements. It outlines the various reforms that have been instituted since independence from the British in 1976. It reviews the objectives of the reforms, which were to ensure ten years of universal education and to bring about significant improvements in the quality of education throughout the system. The second part of the paper examines the extent to which the main issues targeted by the reforms have been resolved and the related aspects of quality enhancement. Finally, future directions as outlined in the Ministry of Education's Strategic Plan are considered.

Key words education system, education reforms, education quality, Seychelles

Introduction

Formal and organised primary education in Seychelles started in 1940, with the establishment of a secular charity school by the Anglican community. French missionaries set up an equivalent church-owned primary school in 1851 and primary education provided through parish schools, using the French medium, remained in the hands of the Catholic Church until 1871. With the introduction of government grant funds to all schools and the establishment of a secondary school on the lines of an English public school, the British colonial administration gradually took over control of the curriculum as well as the organisation of schools (1). By the time of independence from the British in 1976 access to six years of free primary education and three years of secondary education was already well established. Fee-paying grammar schools – still Church controlled - as well as post-secondary training institutions were also in existence.

A change of government in 1977 brought a re-orientation of education principles towards comprehensive and inclusive education for all, free of charge. Private schools were abolished, schools became completely secular and compulsory school age was set at 5½ to 16 years.

Since 1977 the government has maintained a strong commitment to social development policies with particular emphasis on education. The budget allocation to education has remained between 11% and 13% of national expenditure annually over the period 1977 to 2003 (2-3). This was the highest allocation to any Ministry for most of that period and currently comes second only to the budget allocation to the Ministry of Health. For the past two decades education in the Seychelles has been characterised by:

- a comprehensive, co-educational primary and secondary school system, available free of charge to all children aged between 5 and 16+ years.
- Almost 100% attendance by children in this age group.
- A system of further and higher education available to all students who meet the entry criteria of the appropriate courses of study for which they apply.

Schooling actually starts at the age of 3½ years in non-compulsory crèches and the total population of children and young people aged between 3½ and 19+ years who attend full time educational institutions in 2003 is 21 343; based on the projected figures of the 2002 Census (4) this represents 26% of the total population of the country. They are distributed through the education system as shown in Table 1.

School enrolment has remained fairly stable over the past twenty years, with an annual average of 17 228 pupils in primary and secondary schools. The greatest fluctuations (increases of about 2.5%) occurred during the reform periods of 1990/91 and 1998/99 when an extra year was added to the secondary cycle each time, as a result of the phasing out of the